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L1 203 S STATUS (P) PAPER#(P) (REMAIN? OR QUANTIT?)

L2 46 S STATUS (P) PAPER#(5A) (REMAIN? OR QUANTIT?)

=> d 1-10

1. 5,877,782, Mar. 2, 1999, Image recording apparatus; Takashi Imai, et al., 347/3, 22, 23 [IMAGE AVAILABLE]

2. 5,872,635, Feb. 16, 1999, Image forming apparatus and method which transmits information on internal conditions to an image processor; Satoshi Akiyama, 358/296, 406, 434, 442; 395/114; 399/8 [IMAGE AVAILABLE]

3. 5,832,190, Nov. 3, 1998, Image recording apparatus with reliable, efficient and power-saving stand-by state; Hisao Terajima, et al., 395/113; 347/3; 358/401, 437, 442 [IMAGE AVAILABLE]

4. 5,812,747, Sep. 22, 1998, Copying system; Shizuo Kayano, et al., 395/114, 112 [IMAGE AVAILABLE]

5. 5,727,136, Mar. 10, 1998, Image communication utilizing memory shared by multiple units; Toshiji Kubota, 395/114; 358/442, 444, 468; 395/115 [IMAGE AVAILABLE]

6. 5,701,481, Dec. 23, 1997, Data processing apparatus which operates in a plurality of operation modes and includes first and second monitoring means; Masao Hosaka, et al., 395/676 [IMAGE AVAILABLE]

7. 5,700,003, Dec. 23, 1997, Device for sensing the remaining amount of copy paper; Moo-Kyung Sung, 271/110, 145, 162 [IMAGE AVAILABLE]

8. 5,682,140, Oct. 28, 1997, Image forming device with end of life messaging for consumables; K. Trent Christensen, et al., 340/540, 635, 653, 691.1; 347/7 [IMAGE AVAILABLE]

9. 5,673,071, Sep. 30, 1997, Preparatory head drive method for an ink jet printer; Takeshi Fuse, 347/35, 14, 60 [IMAGE AVAILABLE]

10. 5,629,672, May 13, 1997, Low paper detection system; Stephen S. Brown, et al., 340/540, 568.1, 600, 612, 679; 399/23 [IMAGE AVAILABLE]

3957114, 112

US PAT NO: 5,812,747 [IMAGE AVAILABLE]

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DETDESC:

DETD(15)

Control . . . conditions such as selection of an operation mode as an independent copying machine, designation for inputting size of a recording **paper** and copying **quantity** and selection of the inter-connected copying mode which connects plural copying machines for operation, based on designation for inputting from. . . and control of feeding recording papers, control of each step in the case of inter-connected copying, namely, receiving and sending **status** information, control of the image data sending and receiving unit for sending and receiving image data and the **status** information sending and receiving unit and judgment of copying machine based on **status** information. The above-mentioned control unit 26 grasps the conditions of the copying machines by the use of various sensors in. . . monitoring whether the operation of the copying machine is defective and also in order to conduct self-diagnosis for grasping exact **status** when a malfunction occurs. For example, temperature inside fixing device 14, the existence of toner inside developing device, **paper** size of contained **paper quantity** in cassette 15 being used, current copying **quantity** and unnecessary **remain of paper** in a **paper** feeding and conveyance path are cited. These **status** are stored by interrupting the CPU for every prescribed time or, when there occurred a **status** change, stored in a temporary memory device such as a register and a buffer in the form of data or flag. After these **status** data are stored independently or as combination data, they are displayed as message such as "heater warm-up is completed" or. . . on RAM27C. A part of the above-mentioned data or flagged information is sent to outside when conducting inter-connected copying as **status** information inside the copying machine.

## SUMMARY:

BSUM(10)

FIG. . . . of a typical paper sensing device having such problems as mentioned above. In a case where only a single **paper** sheet **remains** in a **paper** storing cassette (not shown), the paper sensing unit 1 of FIG. 1 determines that there is **paper remaining** in the **paper** storing cassette capable of data printed thereon, and accordingly transmits a **status** message via a **status** transmitting unit 3 for display on displaying unit 2 of the image forming device. The **status** message in this case provides an indication that the image forming device is ready to perform a priming operation. Displaying. . . . the image forming device is in the state that the paper storing cassette is empty of any paper sheets, a **status** message indicating that the image forming device may be out of paper is displayed on a display of host 4.. . . .

## DETDESC:

DETD(3)

FIG. 2 is a schematic block diagram illustrating the structure of a sensing device for sensing the **remaining** amount of **paper** sheets stored in an image forming apparatus constructed according to the principles of the present invention. The sensing device for the image forming apparatus, as shown in FIG. 2, has a **remaining** amount of **paper** sensing unit 6 capable of sensing the **remaining** amount of **paper** sheets, a **paper** thickness input unit 5, a **status** transmitting unit 3', a displaying unit 2 and a host 4 such as a personal computer. The displaying unit 2 and the host 4 operate as discussed above with regard to FIG. 1. **Status** transmitting unit 3' operates in a manner similar to that of **status** transmitting unit 3 discussed above with respect to FIG. 1 except that the **status** transmitting unit 3' is capable of transmitting data provided by paper thickness input unit 5 to host 4.

## DETDESC:

DETD(4)

The **remaining** amount of **paper** sensing unit 6 generates a signal indicative of the **remaining** amount of **paper** sheets stored in, for example, a paper cassette of an image forming apparatus. When information regarding the **remaining** amount of **paper** sheets is required in the host 4 or in the image forming apparatus, the **status** transmitting unit 3' transmits the information regarding the **remaining** amount of **paper** sheets to the host 4 and/or displaying unit 2. When the **remaining** amount of **paper** sheets is less than that required to complete a copying or printing operation, e.g., the number of pages to be printed is greater than the **remaining** amount of **paper** sheets, the host 4 informs the user of this state by displaying a message indicative of this state. When the user desires to obtain information regarding the **remaining** amount of **paper** sheets stored in the image forming apparatus, the image forming apparatus transmits information regarding the stored amount of paper sheets. . . . host 4 displays the transmitted information on a display screen thereby providing the user with the

requested information regarding the **remaining** amount of stored  
**paper** sheets.

DETDESC:

DETD(8)

When . . . A change in the position of sensor S of the sensing unit 6 according to the change H1 in the **remaining** amount of stored **paper** sheets changes the resistance value of the variable resistor VR mechanically connected thereto, and then a value of the voltage. . . converter 7 and converted into a digital value. As a result, a digital value is provided to host 4 via **status** transmitting unit 3' in order to determine the amount of **paper** sheets **remaining** in the **paper** cassette. Accordingly, as the amount of **paper remaining** in the stack decreases the resistance value of the variable resistor will, for example, decrease, and as the amount of. . .

DETDESC:

DETD(9)

It should be apparent that the **status** transmitting unit 3 can be constructed to provide data from the **remaining** amount of **paper** sensing unit 6 and data from the paper thickness input unit 5 to host 4 in order to compute the number of sheets **remaining** in the **paper** cassette, or it can be constructed to compute the number of sheets **remaining** in the **paper** cassette in response to the data from the **remaining** amount of **paper** sensing unit 6 and data from the paper thickness input unit 5. Further, if the information regarding the paper thickness. . .

335/114

US PAT NO: 5,727,136 [IMAGE AVAILABLE]

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DETDESC:

DETD(13)

Numeral . . . the similar to the printer CPU 210 in the above-described ink-jet system. Numeral 107 is a recording register which stores **status** information in each unit relating to ink-jet recording. At the recording operation, the recording control CPU 106 sets recording control. . . history of past recording data, subsequently the recording system is properly operated and in the recording queued state from the **ink-remaining-amount** ~~detection~~ recording-**paper**-**remaining-amount** detection, and the content of the recording register 107 including the recording operation state from the print data controller 108, a recording start signal is transmitted. Furthermore, the results of **ink-remaining-amount** detection and **paper-remaining-** amount detection and the recording operation state are stored in the recording register 107 as **status** information. Note that recording control data is data to determine recording time of the ink-jet, timing, and order of applying. . .

DETDESC:

DETD(14)

The above-described recording control data, recording start signal, **ink-remaining-amount** detection information, recording-**paper**-**remaining-amount** detection information, and signal of the operation **status** of the print data controller 108 are communicated between the recording register 107 and the recording control CPU 106 via the data bus 124. Furthermore, the **ink-remaining-detection** information, the recording-**paper-remaining-amount** detection, and the recording state of the print data controller 108 are outputted as a printer **status** signal ~~135a~~ and inputted into the FAX controller 100 via the external register 105a. The recording control data such as. . .

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## SUMMARY:

BSUM(10)

A . . . for storing therein received data, a bit map memory 105 for developing image data for a one page, and a **printer engine** part 107 for actually carrying out printing in accordance with the image data developed in the bit map memory 105.

## DETDESC:

DETD(3)

During . . . one page in a page buffer memory 104 with intermediate codes, and upon outputting, the data are delivered to a **printer engine** part 107 developed in a bit map memory 105. As to the control commands, there are presented a size unit. . . .

## DETDESC:

DETD(11)

Further, . . . device (such as the printing device or a display unit belonging to the host computer). It is noted that the **printer engine** part 1 is used as the output device 107 for printing out the scaler list and the font list.

## DETDESC:

DETD(24)

Referring . . . data table 2 which is prepared in the RAM area in the CPU 101, and is then outputted from the **printer engine** part 107 (step (4)). In the case of no designation by the host computer, the transmission to the host computer is made with the use of the **table** data as a **status** (step (5)).

DETDESC:

DETD(121)

When . . . example "It will take three minutes" or "It took three minutes"). When the audio guide key 113 is depressed, the **status** of the copying machine is audibly informed. For example, if it is depressed during the copy operation, "the preset number. . ." "Toner is short. Supplement it." or "Exchange the cartridge" is announced. In the copying machine having a sensor for the **remaining papers**, a comparison is made with the preset number of copies and "**Remaining papers** are short. Only o o sheets of copies can be made." is announced.

+ 5,877,782

US PAT NO: 5,832,190 [IMAGE AVAILABLE]

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DETDESC:

DETD(280)

The . . . two processes is as follows. That is, in the divided intermediate page process, the process is terminated when the ink **status** (which is set in the interrupt process of detection of a **remaining ink amount**) and the color **paper status** are "OK". Contrary to this, in the divided final page process, the ink **status** and color **status** are kept monitored until the idle signal line of the printer unit 2 indicates an "idle" state.

DETDESC:

DETD(284)

The . . . (27-1). If the state of the remaining ink amount detection output is changed to "presence", it is checked if any **remaining** recording **paper** sheet is present (27-3). If a **remaining** recording **paper** sheet is present, a recording paper jam is determined (27-4). If no **remaining** recording **paper** sheet is present, the **remaining** ink amount detection result is checked (27-5). If the **remaining** ink amount detection result indicates "NG", the **remaining** ink amount detection **status** is set to be "NG". On the other hand, if the **remaining** ink amount detection result indicates "OK", color recording. . . detection result of the color recording paper indicates "NG" (the recording paper sheet is color paper), the color recording paper **status** is set to be "NG" (27-6). On the other hand, if the detection result of the color recording paper indicates. . .

## SUMMARY:

BSUM(13)

In . . . cannot have been accurately informed of any kind of facts, which may cause malfunctions of the terminal device, that the **power** switch of the terminal device is **off**; that there occur some errors in the terminal device itself (i.e. a cover is opened); the terminal device (mainly a . . .

## DETDESC:

DETD(61)

A . . . expands the PDL data into a bit map data. Although PDL usually delivers one page bit map data to a **printer engine**, this system employs a method that one page is divided into a few bands and expanded into a bit map. . .

## DETDESC:

DETD(88)

An ~~EEPROM 108~~ is a device which does not loose the stored data even if the ~~power turns off~~ and can be rewritten data when the power turns on. Accordingly, it is well utilized for memorizing addresses on the. . .

*hold*

## DETDESC:

DETD(89)

A time adjustable clock circuit (RTC) 109 is employed and time progresses even when the **power** turns **off** because it contains an internal battery, whereby real time can be known and utilized an information for scanning and printing. . .

## DETDESC:

DETD(227)

On . . . horizontal sync signal, vertical sync signal and video clock signal for synchronization with video data. Moreover, status information such as ON/OFF of the **power supply** for the scanner and the printer are provided to enable to externally check the status. A function for command interface. . .

## DETDESC:

DETD(279)

In addition, error sent to be from the device driver 86 include no paper, no ink, paper jam and **power off**.

## DETDESC:

DETD(338)

When . . . stored in the band memory into RGB data for the BJ printer 656. The converted data is sent to a ~~printer engine port~~ of the BJ printer 656 through an interface 618. The BJ printer 656 is controlled by a CPU 611. . . .

DETDESC:

DETD(431)

In . . . different kind, the flow goes to the step (3) to activate the job. When an actual job is activated, the **status** is **changed** from WAIT to RUN to ensure the interface. On contrary, when an error stop or an interruption stops the process, . . . .

DETDESC:

DETD(434)

FIG. 47 is a timing chart showing the **changes** of the ~~job~~ process **status** in the server device according to the present invention. In the figure, it is assumed that time passes in the. . . .

DETDESC:

DETD(438)

In the job table checking at the timing 804, ID25 job is selected and activated. Then the **status** of the ID25 job is **changed** to RUN. A new job enters at the timing 801. When one page processing in the ID25 job has been. . . .

=> d 2 fd

US PAT NO: 5,859,956 [IMAGE AVAILABLE] L3: 2 of 24  
DATE FILED: Mar. 3, 1997

=> d 2 fro

US PAT NO: 5,859,956 [IMAGE AVAILABLE] L3: 2 of 24  
DATE ISSUED: Jan. 12, 1999  
TITLE: Information processing device and information processing method  
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Tsutomu Negishi, Tokyo, Japan  
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Yukari Toda, Yokohama, Japan  
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DATE FILED: Mar. 3, 1997  
REL-US-DATA: Continuation of Ser. No. 182,499, Jan. 18, 1994,  
abandoned.  
FRN-PRIOR: Japan 5-021704 Jan. 18, 1993

## SUMMARY:

BSUM(5)

At . . . wide use. Such computers are normally designed to incorporate hard disk drives (HDD's) and a few input/output devices, such as **printers** (or I/O devices, hereafter referred to simply as "devices"), and to be capable of external connectivity via a port connector.. . .

## SUMMARY:

BSUM(13)

"Hibernation" is one example of those **power** management schemes. Hibernation is an operation by which, when a condition arises that makes it impossible to continue a **job** (such as a voltage drop at the battery pack), all the data that are required to resume the **job** later at the point of interruption are saved to the hard disk (HDD) of the system and then the whole system is powered **off**. The data to be saved to the HDD's, for example, hardware context information, such as the contents of a main. . . CPU. Hereafter, the data is referred to as a "hibernation file". When a user powers on the system after the **power** supply has been reinstated, the hibernation file that has been **stored** on the hard disk is restored to the original sections and then the **job** that was halted is automatically restarted at the point of interruption. This **job** restart operation is called a "wake up." A series of **power** management operation, the "hibernation" and the "wake up," are executed by a PMC (**Power** Management Code) that is included in the OS of the system or in the ROM of the system.

## DETDESC:

DETD(18)

The . . . modem, is connected to the serial port 27, while a device that transfers data by single bytes, such as a **printer**, is connected to the parallel port 28. The FDD 30 is connected to the I/O controller 26 via a floppy. . .

for copying machine  
+ printer.

DETDESC:

DETD(10)

FIG. 5 shows a memory map of the RAM 302. The RAM 302 comprises a work data area 401 **storing** image-forming conditions of a program, a copy status area 402 **storing** statuses of the copying machine, a copy mode area 403 **storing** data on copy mode specified by an operator with the operational panel 40, a copy **job** table area 404 **storing** data such as the order for reading image data from the image memory 303, and an image information table area 405 **storing** information such as address, size or a data on image compression. A ratio of image reading for each document by . . . 50% for a document when a half of the image data of the entire document has been read when the **power** supply 305 is turned **off**. As mentioned above, the RAM 302 is connected to the backup **power** source 304, and the data in the RAM 302 is not vanished when the **power** supply 305 is turned **off** while a copy operation is interrupted by the auto-**power-off** function or the like.

DETDESC:

DETD(12)

The backup **power** source 304 keeps the data written to the work data area 401 and the copy status area 402 even when the **power** supply 305 is turned **off**. If the data is kept in the work data area 401 when the **power** supply 305 is turned on, the CPU 300 resumes the status of the copying state of the copying machine just before the **power** supply 305 was turned **off** according to the parameters **stored** in the work data area 402. In order to take a possibility of a new **job** into account when the **power** supply 305 is turned on again, the data in the areas 401a and 402a are saved in the save areas. . . and 402b, and the data in the areas 401a and 402a are cleared. When a preparation operation on a new **job** is detected, for example, when a new document is put on the document tray 1a, the CPU 300 first performs the new **job**. Then, the CPU 300 copies the data in the save areas 401b and 402b to the areas 401a and 402a to resume the status of the copying machine just before the **power** supply 305 is turned **off**.

DETDESC:

DETD(14)

FIG. . . . be interrupted (YES at step S20), a trouble happened and a predetermined time passed thereafter to interrupt copying by turning **off** the **power** supply 305. Then, recover.sub.-- **job** flag is set at "1" to prepare the resume function (step S21), and the data in the areas 401a and . . . On the other hand, if copy interrupt is not decided to happen (NO at step S20), or if a new **job** is waited, it is not necessary to perform resume function, and recover.sub.-- **job** flag is set at "0" (step S23). Finally, the data **stored** in the areas 401a and 402a are cleared (step S24).

## SUMMARY:

BSUM(25)

Since all **print job** data received by the preferred **printer** of the present invention is **stored** in a non-volatile memory, the capability exists for recovering such **print jobs** after the occurrence of a **power** failure. Of course, this **power** failure could be accidental (by the circumstance where the incoming utility **power** has been interrupted), or could be purposeful when a user turns **off** the **printer**. In either circumstance, once a **print job** is fully buffered on the non-volatile memory, the **printer** of the present invention will send an NPAP message to the originating host computer (i.e., the host which originally transmitted that particular **print job**) in the form of an acknowledgement message that essentially allows the host computer to be assured that the job ultimately will be **printed**. Of course, if no **power** failure occurs, that particular **print job** will be **printed** in due course.

US PAT NO: 5,245,368 [IMAGE AVAILABLE]

L11: 1 of 1

SUMMARY:

BSUM(17)

Accordingly, one object of the present invention is to provide an electronic reprographic system which stores within the printer **information** of a job's features for any **incomplete job** which has been **transmitted** to the printer.

DETD(412)

In the network **printing**/scanning system according to present invention, the server machine, in a case where the **job** owner specified by the **job** owner specifying function does not exist on the network due to log-out or a **power** being tuned **off**, comprises a message queue function for maintaining or **storing** the corresponding message in the message queue, periodically checking whether the specified **job** owner logs in again or not, and immediately transfers the message maintained or **stored** in the message queue when the log-in is identified, so that even if a **job** owner logs-out or turns a **power OFF** once without waiting for a message to be returned, the **job** owner can receive the message if he logs in again. Namely, in a case where there is no destination of. . .

DETDESC:

DETD(413)

In the network **printing**/scanning system according to the present invention, the message queue function deletes the corresponding message maintained or **stored** in the message queue in a case where the specified **job** owner has not logged in again after a specified period of time preset by a manager of the network has past, so that even if the **job** owner logs-out or turns a **power OFF** without waiting for a message to be returned, any incomplete **jobs** (messages) are not left on the system. Namely, in a case where there is no destination of a message to. . .

CLAIMS:

CLMS (7)

7. A network **printing**/scanning system according to claim 3, wherein said server machine, in a case where the **job** owner specified by said **job** owner specifying function does not exist on said network due to log-out or a **power** being tuned **off**, has a message queue function for maintaining or **storing** the corresponding message in the message queue, periodically checking whether said specified **job** owner logs in again or not, and immediately transfers the message maintained or **stored** in the message queue when the log-in is identified.

DETDESC:

DETD(7)

In . . . and control information from a processing module which it serves via the LAN 120 and the line 211 and sends status information on the printer 112 to the processing module using the printer through the LAN 120. The device control interface. . . data and control information data received from the microprocessor 201 to the device controller 220 of printer 112 and transfers status signals from the device controller 220 to the microprocessor 201. The **status** signals may include information on transient state; on-line, printing; off-line, not printing; **engine** test detected; maintenance program running; in sleep mode; paper out; ~~printer open~~; paper jam; no EP cartridge; toner low; U-L. . . front card removal; NVRAM full; hard disk full; memory full; low resolution, can't switch to low; hard disk crash; "please ~~power off~~"; full paint reject; scale error; duplex reject; expansion I/O error; tray trouble; resident ROM: bad format; not supported option; no. . .

transmit